Time frame	Unit title	Key and Related Concepts	Global context and exploration	Statement of inquiry	Objective/ Objective strands	ATL skills	Content
20 Hours	Welcome (Introductory unit- can be embedded into first unit).	Logic justification change	Identities and relationships (Competition, cooperation and collaboration)	Logic and change serve as a justification method through competition, cooperation and collaboration.	A (i) B (ii) C (,iv,v) D (i)	Communication: Communication Skills Give and receive meaningful feedback. Self-management: Organization Skills Keep an organized and logical system of information files/ notebooks	Knowing and understanding criteria for success- Develop understanding of the mathematics programme and its objectives. Start knowing and understanding the mathematical practices. Develop and apply communication skills such as accountable talk. Baseline test- Solve problems using previous knowledge. Apply previous knowledge to new situations. Problem solving techniques- Collaborative investigation on problem solving process and techniques particular to the year. Create resources to use as reference materials through the year.
20 Hours	Ratios and Relationships. Unit 1	Relationships, Measurement, Equivalence	Globalization and sustainability:: Availability of resources and societies throughout history	Equivalences shapes the measurement systems and relationships to determine the availability of resources and societies throughout history.	A (i,ii,iii) B (i,ii,iii) C (i,ii,iii,IV,V) D (i,ii,ii, V)	Communication: Communication Skills. Use a variety of media to communicate with a range of audiences. Social: Collaboration Skills Negotiate effectively	Ratios and rates identifies the unit rate as the slope; compares two different proportional relationships represented in different ways explains, using similar triangles, why the slope is the same between any two distinct points on a non-vertical line in the coordinate plane; derives the equation y = mx for a line through the origin solves multistep linear equations in one variable with rational coefficients using the distributive property or collecting like terms on a given side; identifies linear equations as having solutions of one, infinitely many, or none by transforming the given equation into simpler forms by inspection justifies why an equation has one solution, infinitely many solutions, or no solution

| 20 Hours | The data all around us. Unit 2 | Logic, Patterns, Generalization | Fairness and development (Economic markets, demand and supply) | Logic is the mathematical generalization of patterns using data to make decisions regarding economic market, demand and supply. | A (i,ii,iii), B (i,ii,iii), C (i,ii,iii,IV,V), D (i,ii,iii,IV,V) | Research: information literacy skills Collect and analyze data to identify solutions and make informed decisions Self-management: Affective Skills Practice dealing with disappointment and unmet expectations | Data Analysis and Expressions Analysis of data- constructs and interprets scatter plots for bivariate measurement data to investigate patterns of association between quantities draws a straight line on a scatter plot that closely fits the data points interprets the slope and intercept, given context completes a two-way table of categorical data

Extension- compares more than one trend line for the same scatter plot and justifies the best one creates and uses a linear model based on a set of bivariate data to solve a problem involving slope and intercept constructs a two-way table to summarize data; describes relative frequencies for possible associations from a two-way table

Rational Numbers, Irrational Numbers and Expressions- places irrational numbers on a number line; identifies irrational decimal expansions as approximations; identifies rational and irrational numbers and converts less familiar rational numbers to fraction form applies the properties of integer exponents to generate equivalent numerical expressions uses square root and cube root symbols to represent solutions to mathematical equations in the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number; evaluates cube roots of small perfect cubes uses numbers expressed in the form of a single digit times an integer power of 10 to express very small numbers performs operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used; interprets scientific notation generated by technology

Extension- analyzes the reasonableness of the result of using the properties of integer exponents in numerical expressions justifies how square roots and cube roots relate to each other and to their radicands Create algebraic expressions that record operations (with numbers and with letters standing for numbers) involving real-world and mathematical contexts uses a real-world context to construct multiple equivalent expressions creates a real-world situation that corresponds to a given expression |
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20 Hours	Modeling Equality. Unit 3	Relationships, Equivalence, Systems, Models	Scientific and technical innovation: Digital life and the virtual environment	Systems are modeled using equivelant relationships in digital life and the virtual environment.	A (i,ii,iii), B (i,ii,iii), C (i,ii.iii.IV,V), D(i,ii,iii,IV,V)	Communication: Communication Skills Participate in, and contribute to, digital social media networks. Communication: Communication Skills Collaborate with peers, experts or others, employing a variety of digital environments and media.	Functions uses a table or graph to demonstrate understanding that a function is a rule that assigns to each input exactly one output and that the graph of a function is the set of ordered pairs consisting of an input and the corresponding output compares properties (i.e., slope, y-intercept, values) of two linear functions each represented in a different way (algebraically, graphically, numerically in tables, or verbal description) interprets the equation y = mx + b as defining a linear function whose graph is a straight line interprets the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values; constructs a function to model a linear relationship between two quantities describes qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear)

20 Hours	Be balanced.	Unit 4	Logic, Models, Representation	Fairness and development (Inequality, difference and inclusion in the use and access to resources)	Unbiased representations using logical mathematical models promote inequality, difference and inclusion in the use and access to resources.	A (i,ii,iii), B (i,ii,iii), C (i,ii,iii,IV,V), D (i,ii,iii,IV,V)	Self-management: Organization Skills Plan strategies and take action to achieve personal and academic goals Thinking: Critical Thinking Skills Recognize unstated assumptions and bias	Integers, Rational Numbers and Operations with integers demonstrates that positive and negative numbers are used together to describe quantities having opposite directions or values; uses positive and negative numbers to represent quantities in real-world contexts; explains the meaning of 0 in each situation identifies when two points are reflections on a number line or reflections across one axis on the coordinate plane; plots ordered pairs, including rational numbers, on a coordinate plane, and on both horizontal and vertical number lines; includes coordinates of absolute value to find distances between points with the same first or second coordinate in mathematical problems determines the greater or lesser rational number, including absolute values in a real-world context; uses mathematical notation and words to express these statements of order writes, interprets, and explains statements of order for rational numbers in real-world contexts; interprets absolute value as magnitude for a positive or negative quantity in a real-world situation; distinguishes comparisons of absolute value from statements about order applies properties of operations as strategies to add and subtract rational numbers; explains subtraction as adding the additive inverse; shows $p + q$ as the number located a distance $|q|$ from p in a positive or negative direction applies properties of operations as strategies to multiply or divide rational numbers; explains that division by zero is undefined; shows that $-(q/p) = (-p)/q = p/(-q)$; converts a rational number to a decimal using long division and knows that the rational number terminates in 0 or eventually repeats Extension- draws conclusions about a real-world situation involving absolute values of rational numbers and compares values justifies the steps taken to add or subtract rational numbers; analyzes for errors as necessary

| 20 Hours | The Art of Geometry. Unit 5 | Form, Pattern, Space | Personal and cultural expression (Variety in geometric form allows for personal and cultural expression in artistry and creation) | Patterns and forms create measurable space through variety in geometric form allows for personal and cultural expression in artistry and creation. | A (i,ii,iii), B (i,ii,iii), C (i,ii,iii,IV,V) D (i,ii,iii,IV,V) | Self-management: Reflection Skills Identify strengths and weaknesses of personal learning strategies (self-assessment) Organization Skills Use appropriate strategies for organizing complex information | Geometry describes a sequence of up to two rigid transformations between two congruent figures describes the effect of a dilation, translation, rotation, or reflection on two-dimensional figures using coordinates and coordinate notation identifies a sequence of transformations and a dilation that results in similarity finds unknown angle measures for angle pairs when parallel lines are cut by a transversal; gives an informal argument for: · sum of the angles of a triangle equals 180 · the measure of an exterior angle of a triangle is equal to the sum of the measures of the non-adjacent angles models and explains the proof of the Pythagorean theorem and its converse using a pictorial representation calculates unknown side lengths using the Pythagorean theorem; applies the Pythagorean theorem to find the distance between two points in a coordinate system with the right triangle drawn uses the formulas for the volume of cones, cylinders, and spheres to solve real-world and mathematical problems

Extension-
solves geometric multistep real-world and mathematical area and volume problems including decimal and fractional measurements describes the effect of two transformations, including at least one dilation, on two- dimensional figures using coordinates and coordinate notation |
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| 20 Hours | Be ready. Unit 6 | Logic, Systems, Change | Orientation in Space and Time: Indigenous understanding | Logic drives the change in systems throughout Indigenous understanding. | A (i,ii,iii) B (i,ii,iii) C (i,ii,iii,IV,V) D (i,ii,iii,IV,V) | Social: Collaboration Skills Build consensus Research: Information Literacy Skills Process data and report results | Algebra skills constructs an equivalent expression using different models and materials applies multiple properties of operations to analyze and validate equivalent expressions solves a multi-step equation or inequality as a process of answering a question and justifies the answer: which values from a specified set, if any, make the equation or inequality true justifies that a variable can represent an unknown number or, depending on the purpose at hand, any number in a specified set solves and justifies multi-step real-world and mathematical problems |